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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,987	03/08/2002	Hajime Seki	302-001	7219
23364	7590	09/20/2005	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			COLEMAN, ERIC	
			ART UNIT	PAPER NUMBER
			2183	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/069,987

Applicant(s)

SEKI, HAJIME

Examiner

Eric Coleman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3,4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3,4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 3 and 4 recites the following limitations "the number" in claim 3 (line 2); "the logical registers" in claim 3 (line 3); "the process of register renaming" in claim 3 (line 8 and line 13), "The order" in claim 3 (line 11); "the same tag" in claim 3 (line 14); "the number in claim 4 (line 2) "the logical registers" in claim 4 (line 3); "the process of register renaming" in claim 4 (line 8 and 14); "the order" in claim 4 (line 11); "the same tag" in claim 4 (line 14) "the cycle/cycles before the last cycle" claim 4 (line 10); "the last cycle" claim 4 (line 16). There is insufficient antecedent basis for these limitations in claims 3 and 4.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The scope of meaning of "the cycle/cycles before the last cycle" in line 10 and "the last cycle" in line 16 is unclear. It is unclear which cycle/cycles referenced (i.e., is it the last cycle before an interrupt or the last cycle before the system powers down or something else).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alsup (patent No. 5,694,564) in view of Meyer (patent No. 6,442,677).

6. Alsup taught the invention substantially as claimed including a data processing ("DP") system comprising:

7. In a microprocessor based superscalar architecture capable of out-of-order execution, comprising: physical registers (20)(e.g., see fig. 2,3,4) , the number of which is greater than that of the logical registers prescribed by the architecture (e.g., see col. 4, line 31-col. 5, line 3) ; a free list (32) that is designed to hold unallocated physical-register numbers(e.g., see fig. 2, and col. 4 lines 10-57, and col. 5, line 4-col. 6, line 44); and a mapping table (30) having entries that are provided in respective correspondence with the logical registers and that are each designed to hold a physical-register number (e.g., see col. 4, line 31-col. 6, line 9); a method for performing register renaming in a pipelined manner, for each group of instructions that are to go through the process of register renaming simultaneously , comprising the steps of:

a) tagging each logical number shown as a destination operand based on the order of the instructions in the group(e.g., see col. 6, line 44-col. 7, line 65), and

b) renaming each tagged logical-register number to the physical number that is to be taken out of said free list and allocated in correspondence with the tag (e.g., see figs. 4,5,6,7,8,9 and col. 8, lines 3-67), and renaming each non-tagged logical register

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number to the physical number that is to be obtained by accessing said mapping table(e.g., see col. 9, lines 7-37).

8. Alsup did not expressly detail (claims 3,4) tagging each logical-register number shown as a source operand that is RAW (read-after-write) dependent on an instruction that goes through the process of register renaming simultaneously with the same tag for the destination operand of said instruction Meyer however taught that when a source operand of a subsequent instruction corresponds to the destination operand of the load instruction if the tag is assigned to the source operand is the same as the destination register tag (e.g., see col. 15, line 62-col. 16, line 6).

9. It would have been obvious to one of ordinary skill in the DP art to combine the teachings of Alsup and Meyer. One of ordinary skill would have been motivated to add the Meyer teachings of assigning the same tag to two instructions where the source of one instruction is read after write dependent on a load instruction at least in order to take advantage of the Meyer teachings of superforwarding the operand to more efficiently provide operands for processing (e.g., see col. 16, lines 50-65 of Meyer).

10. As to the cycle/cycles "before last cycle..." limitation in claim 4 and "in the last cycle..." limitation in claim 4 Since the tagging of logical registers as destination operand based on the order occurred before the renaming of each tagged logical register as understood the Alsup reference taught the in cycle before the cycle in that the renaming occurred (i.e., before the last cycle) the registers were tagged and in the last cycle ( i.e. the cycle where renaming occurred) tagged logical registers were

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renamed in the sequence detailed above (e.g., see col. 6, line 44-col. 7, line 65 and (e.g., see figs. 4,5,6,7,8,9 and col. 8, lines 3-67).

11. The change in scope the amended claims has necessitated a new search.

### ***Response to Arguments***

Applicant's arguments filed 6/27/05 have been fully considered but they are not persuasive. Claims 1 and 2 have been cancelled. New claim 3 and 4 are rejected above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (571) 272-4163. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC



ERIC COLEMAN  
PRIMARY EXAMINER